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10/609,634	07/01/2003	Kazunari Kimino	R2180.0159/P159	4954

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EXAMINER	
KOCH, GEORGE R	

ART UNIT	PAPER NUMBER
1734	

DATE MAILED: 03/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/609,634	KIMINO, KAZUNARI	
	Examiner	Art Unit	
	George R. Koch III	1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 December 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) *12-22* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11, 23-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-11 and 23-40 have been considered but are unpersuasive.

2. Applicant argues, with respect to claims 1, 2, 6-8, 10, 11, 23, 24, 28-30, and 32-33, that Ciardella does not teach or suggest providing droplets on a semiconductor wafer "substrate provided with at least one electrode formed on a first surface thereof". Applicant appears to be essentially arguing that this substrate being worked up is not disclosed in Ciardella. (Remarks filed 12/20/2005, page 2.)

However, MPEP 2115 sets forth the proposition that the "material or article worked upon does not limit apparatus claims". MPEP 2115.

> "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969). Furthermore, "[i]nclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims." *In re Young*, 75 F.2d *>996<, 25 USPQ 69 (CCPA 1935) (as restated in In re Otto, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)).
>
> In *In re Young*, a claim to a machine for making concrete beams included a limitation to the concrete reinforced members made by the machine as well as the structural elements of the machine itself. The court held that the inclusion of the article formed within the body of the claim did not, without more, make the claim patentable.
>
> In *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967), an apparatus claim recited "[a] taping machine comprising a supporting structure, a brush attached to said supporting structure, said brush being formed with projecting bristles which terminate in free ends to collectively define a surface to which adhesive tape will detachably adhere, and means for providing relative motion between said brush and said supporting structure while said adhesive tape is adhered to said surface." An obviousness rejection was made over a reference to Kienzle which

> taught a machine for perforating sheets. The court upheld the rejection stating that "the references in claim 1 to adhesive tape handling do not expressly or impliedly require any particular structure in addition to that of Kienzle." The perforating device had the structure of the taping device as claimed, the difference was in the use of the device, and "the manner or method in which such machine is to be utilized is not germane to the issue of patentability of the machine itself."
>
> Note that this line of cases is limited to claims directed to machinery which works upon an article or material in its intended use. It does not apply to product claims or kit claims (i.e., claims directed to a plurality of articles grouped together as a kit).

In this case, the structure of the substrate does not distinguish the apparatus as claimed from the apparatus of Ciardella.

3. Applicant also appears to be arguing that the controller of Ciardella does not disclose "controlling said discharging mechanism... such that said raw sealant resin is attached to said first surface of said semiconductor wafer substrate except at least a portion of said electrode" (emphasis by Applicant). However, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In this case, Ciardella discloses a controller that accurately places dots of viscous fluid (abstract, specification, claims, etc). Therefore, Ciardella more than capable of placing raw sealant, a viscous fluid, in the claimed location.

4. In response to applicant's argument that there is no suggestion to combine the references (Ciardella and Bouras), the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the

claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Bouras is merely being relied upon for details as to the temperature controller, and to show that it would be obvious that Ciardella can handle the substrates in Bouras.

Claim Rejections - 35 USC § 102

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1, 2, 6-8, 10, 11 and 23, 24, 28-30, and 32-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Ciardella (US 5,711,989).

As to claim 1 and 23, Ciardella discloses an apparatus (see Figure 5) for manufacturing a semiconductor device, comprising: a substrate holding unit (conveyor and fixer - see lift and lock mechanism in column 3, lines 5-13 and column 5, lines 36-40) for holding a semiconductor wafer substrate (i.e., a circuit board with semiconductor elements thereon, see columns 1-10), wherein said semiconductor wafer substrate is capable of being provided with at least one electrode formed on a first surface thereof (chip 10, solder balls 12, etc), a discharging mechanism (syringe 20 and dispensing needle 22) which is explicitly for discharging droplets (see abstract, which recites "drop generator") of viscous material (for example, column 8, lines 8-10) contained in a

viscous material container unit (syringe 84) through at least one discharging nozzle (nozzle 70) onto said first surface of said semiconductor wafer substrate held on said substrate holding unit; a drive mechanism (conveyor 22 and XYZ electromechanical positioner 38) for displacing at least one of said semiconductor wafer substrate and said discharging nozzle; and a control unit (items 18, 38, 40, and 42) for controlling said discharging mechanism and said drive mechanism such that said raw sealant resin is attached to said first surface of said semiconductor wafer substrate except at least a portion of said electrode. The apparatus of Ciardella, disclosed as dispensing viscous material, is capable of dispensing any sub-species of viscous material including raw sealant resin.

As to claim 2 and 24, Ciardella is capable of being used wherein said electrode formed on said first surface of said semiconductor wafer substrate is a protruded-shaped electrode, and wherein said control unit is adapted to control said discharging mechanism and said drive mechanism such that said raw sealant resin is attached to said first surface except a tip portion of said protruded-shaped electrode.

As to claim 6 and 28, Ciardella discloses a heater (see column 6, lines 64-67 and column 7, lines 1-19) for heating said raw sealant resin contained in said resin container unit.

As to claim 7 and 29, the control unit of Ciardella is capable of controlling said discharging mechanism and said drive mechanism such that said raw sealant resin is not attached to at least a portion of dicing lines of said semiconductor wafer substrate.

As to claim 8 and 30, the control unit of Ciardella is capable of being adapted to control said discharging mechanism and said drive mechanism such that said raw sealant resin is not attached to dicing lines of said semiconductor wafer substrate and forms a layer with edges of a rounded shape in a vicinity of intersecting points of said dicing lines.

As to claim 10 and 32, the control unit of Ciardella is capable of controlling said discharging mechanism and said drive mechanism such that said raw sealant resin is not attached to at least a portion of dicing lines of said semiconductor wafer substrate.

As to claim 11 and 33, the control unit of Ciardella is capable of controlling said discharging mechanism and said drive mechanism such that said raw sealant resin is not attached to dicing lines of said semiconductor wafer substrate and forms a layer with edges of a rounded shape in vicinity of intersecting points of said dicing lines.

Claim Rejections - 35 USC § 103

7. Claims 4, 26, 34-36, 38 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ciardella (US 5,711,989) as applied to claims 1, 2, 6-8, 10, 11 and 23, 24, 28-30, and 32-33 above, and further in view of Bouras (US 5,906,682).

As to claim 4 and 26, Ciardella does not suggest that the substrate holding unit is provided with a temperature control mechanism.

Bouras discloses an improvement of Ciardella wherein the substrate holding unit is provided with a substrate temperature control mechanism (item 44, 46 and 47, see

column 5, lines 32-47) for controlling a temperature of at least said semiconductor wafer substrate. One in the art would appreciate that preventing hot spots on the circuit board and its components would protect the substrate from damage. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilize such a temperature control mechanism in order to protect the substrate from overheating.

As for claim 34, Ciardella discloses the discharging head (nozzle 70 and subelements - see Figure 3), the resin container unit (syringe 84), the drive mechanism (conveyor 22 and XYZ electromechanical positioner 38), and control unit (items 18, 38, 40, and 42) for controlling the discharging head and the drive mechanism (see rejection of claim 1 and 23 above) and wherein the substrate is held in a substrate holding unit (conveyor and fixer - see lift and lock mechanism in column 3, lines 5-13 and column 5, lines 36-40).

However, while Ciardella does disclose a semiconductor substrate (circuit board 35), Ciardella is silent as to the details of the circuit board.

Bouras, which discloses an improvement of Ciardella, further discloses that a similar semiconductor wafer substrate (either of chip 10 or circuit board 16), the semiconductor wafer substrate having at least one electrode (items 12 and 14) on a first surface thereof. Therefore, one in the art would appreciate that the claimed substrate can be used with Ciardella. One in the art would utilize the claimed substrate in order to properly coat the substrate and to reduce the need for multiple versions of similar

apparatus. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized such a substrate with the apparatus of Ciardella in order to reduce apparatus costs.

As to claim 35, Bouras as incorporated discloses that at least one electrode has a protruded shape (as seen in Figures 1 and 2).

As to claim 36, Ciardella is capable of being used to control said discharging head and said drive mechanism such that the first surface of the semiconductor wafer is covered by said raw sealant resin except a tip portion of said protruded-shaped electrode.

As to claim 38, Ciardella does not suggest that the substrate holding unit is provided with a temperature control mechanism.

Bouras discloses an improvement of Ciardella wherein the substrate holding unit is provided with a substrate temperature control mechanism (item 44, 46 and 47, see column 5, lines 32-47) for controlling a temperature of at least said semiconductor wafer substrate. One in the art would appreciate that preventing hot spots on the circuit board and its components would protect the substrate from damage. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilize such a temperature control mechanism in order to protect the substrate from overheating.

As to claim 40, Ciardella discloses a heater (see column 6, lines 64-67 and column 7, lines 1-19) for heating said raw sealant resin contained in said resin container unit.

8. Claims 3, 5, 25, 27, 31 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ciardella as applied to claims 1 and 23 above, or Ciardella and Bouras as applied to claim 34 above, and further in view of Nakazawa (US 5,935,375).

As to claim 3, 25 and 37, Ciardella and/or Bouras does not disclose that said discharging mechanism is provided with a plurality of discharging nozzles.

Nakazawa discloses using a discharging mechanism is provided with a plurality of discharging nozzles (see Figures 7A, 7B, 8A, and 8B). Nakazawa discloses that different nozzle sizes can be used in order minimize the differences in the rate of resin dispensing, so that the formation of resin-less voids is deterred (column 4, lines 26-45). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized multiple nozzles as in Nakazawa in order to avoid resin-less voids.

Furthermore, as to claims 5, 25, and 37, the discharging nozzle of Nakazawa meet the limitation of being two different kinds of discharging mechanisms, heads or means.

As to claim 9 and 31, the control unit of Ciardella and/or Bouras is capable of said control unit controls said discharging mechanism and said drive mechanism such that a first discharging mechanism of said at least two kinds of discharging mechanisms is capable of discharging droplets of raw sealant resin of an amount smaller than other

discharging mechanisms used for discharging said raw sealant resin for an area in a vicinity of said electrode.

9. Claims 5, 9, 27, 31 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ciardella as applied to claims 1 and 23 above, or Ciardella and Bouras as applied to claim 34 above, and further in view of Prentice (US 6,007,631).

As to claim 5, 27, and 39, Ciardella and/or Bouras does not disclose at least two kinds of discharging mechanisms, heads or means, each being capable of discharging respective different amounts of raw sealant resin.

Prentice discloses at least two kinds of discharging mechanisms, heads or means, (see Figure 5) each being capable of discharging respective different amounts of raw sealant resin. Prentice discloses that such multiple mechanisms allow for parallel processing of the substrates (see abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have two discharging mechanisms in order to achieve parallel processing.

As to claim 9 and 31, the control unit of either Ciardella and/or Bouras is capable of said control unit controls said discharging mechanism and said drive mechanism such that a first discharging mechanism of said at least two kinds of discharging mechanisms is capable of discharging droplets of raw sealant resin of an amount smaller than other discharging mechanisms used for discharging said raw sealant resin for an area in a vicinity of said electrode.

10. Claims 5, 9, 27, 31 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ciardella as applied to claims 1 and 23 above, or Ciardella and Bouras as applied to claim 34 above, and further in view of Cavallaro (US 6,017,392).

As to claim 5, 27, and 29, Ciardella and/or Bouras does not disclose at least two kinds of discharging mechanisms, heads or means, each being capable of discharging respective different amounts of raw sealant resin.

Cavallaro discloses at least two kinds of discharging mechanisms, heads or means, each being capable of discharging respective different amounts of raw sealant resin. Cavallaro discloses that each mechanism can be connected to or include different types of nozzles and/or dispense different types of liquids (column 2). Cavallaro discloses that this system allows for the assembly to dispense at different locations without it being necessary to move the entire pump assembly every time a dot is dispensed. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have two discharging mechanisms in order to dispense at multiple locations without moving the entire assembly.

As to claim 9 and 31, the control unit of Ciardella and/or Bouras is capable of said control unit controls said discharging mechanism and said drive mechanism such that a first discharging mechanism of said at least two kinds of discharging mechanisms is capable of discharging droplets of raw sealant resin of an amount smaller than other discharging mechanisms used for discharging said raw sealant resin for an area in a vicinity of said electrode.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George R. Koch III whose telephone number is (571) 272-1230 (TDD only). If the applicant cannot make a direct TDD-to-TDD call, the applicant can communicate by calling the Federal Relay Service at 1-866-377-8642 and giving the operator the above TDD number. The examiner can normally be reached on M-Th 10-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Fiorilla can be reached on (571) 272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

George R. Koch III
Patent Examiner
Art Unit 1734

GRK
3/10/2006